



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
**United States Patent and Trademark Office**  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/585,675	12/30/2014	Kay H. Brodersen	16113-7204001	1731
26192	7590	02/25/2020	EXAMINER	
FISH & RICHARDSON P.C. PO BOX 1022 MINNEAPOLIS, MN 55440-1022			LEE, PAUL D	
			ART UNIT	PAPER NUMBER
			2862	
			NOTIFICATION DATE	DELIVERY MODE
			02/25/2020	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

*Ex parte* KAY H. BRODERSEN, HAVARD GARNES,  
DIMITRIS MERETAKIS, OLAF BACHMANN,  
and STEVEN LEE SCOTT

---

Appeal 2019-002497  
Application 14/585,675  
Technology Center 2800

---

Before CATHERINE Q. TIMM, JAMES C. HOUSEL, and  
MERRELL C. CASHION, JR., *Administrative Patent Judges*.

CASHION, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant<sup>1</sup> appeals from the Examiner's decision to reject claims 1, 2, 4–6, 9–12, 14–16, 19, and 20 under 35 U.S.C. § 101 as directed to patent-ineligible subject matter. We have jurisdiction under 35 U.S.C. § 6(b).

---

<sup>1</sup> We use the word Appellant to refer to “applicant” as defined in 37 C.F.R. § 1.42(a). Appellant identifies the real party in interest as Google LLC. Appeal Br. 1.

We AFFIRM.

### CLAIMED SUBJECT MATTER

The invention relates to systems and methods to “ensure anomaly detection and guided analysis that are statistically meaningful, avoid overfitting, and provide a generative model for forecasting.” Spec. ¶ 2.

According to Appellant, the claimed invention provides a

specific way in which anomalies that exist in the unrepresented (i.e., unlaunched) underlying slice data are surfaced to the user in the aggregate time series data so that the user need not navigate to (or launch) the underlying slice data in order to identify the existence of these underlying anomalies, and so that the user can directly navigate directly to the appropriate underlying slice of data to further analyze the anomalies in the underlying slice data, thereby allowing the user to more quickly access the appropriate data.

Appeal Br. 6–7.

Claim 1, reproduced below from the Claims Appendix to the Appeal Brief, is illustrative of the claimed subject matter (formatting added):

1. A computer-implemented method for anomaly detection and forecasting time-series data, the method comprising:

receiving, at a server, a request from a client to analyze a time-series data comprising a plurality of data points;

accessing a database of global calendars;

building a structural time-series model from the time-series data and the database of global calendars, the structural time-series model comprising an aggregation of time-series data in a plurality of data dimensions and a plurality of probability distributions, each probability distribution corresponding to a data point in the aggregation of time-series data;

determining, for each data point of the time-series data, a range of expected values from a respective probability distribution, the range of expected values capturing a predefined percentage of the respective probability distribution;

detecting an aggregate anomaly at a first data point of the aggregation of time-series data responsive to comparing the first data point with a respective range of expected values;

detecting a slice anomaly in slice data for one of the data dimensions, wherein the slice data has a fixed value for one of the data dimensions;

determining that a time of the slice anomaly matches a time of the aggregate anomaly; and

in response to determining that the time of the slice anomaly matches the time of the aggregate anomaly, transmitting, to the client for display, data that identify a location of the aggregate anomaly in the aggregation of time-series data as well as data identifying the slice anomaly as a drill-down suggestion indicating that, although not initially presented in the aggregation of time series data, the slice anomaly will be included in a presentation of the slice data.

Appeal Br. 9–10 (Claims Appendix).

Independent claim 19 is directed to a computer-implemented system for anomaly detection and forecasting time-series data that essentially performs the method of claim 1.

#### OPINION

The Examiner maintains the rejection of claims 1, 2, 4–6, 9–12, 14–16, 19, and 20 under 35 U.S.C. § 101 as directed to patent-ineligible subject matter. Final Act. 3–7.

We review the appealed rejection for error based upon the issues identified by Appellant and in light of the arguments and evidence produced thereon. 37 C.F.R. § 41.37(c)(1)(iv); *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential), *cited with approval in In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011) (explaining that even if the Examiner had failed to make a prima facie case, “it has long been the Board’s practice to require an applicant to identify the alleged error in the examiner’s rejections”).

After considering the argued claims and each of Appellant’s arguments, we are not persuaded that Appellant identifies reversible error. Thus, we affirm the Examiner’s rejection for the reasons expressed in the Final Office Action and the Answer. We add the following primarily for emphasis.

Appellant does not argue any claim separate from the other claims. *See generally* Appeal Br. In view of this, and for the purposes of this opinion, we select independent claims 1 and 11 as representative of the subject matter claimed. In accordance with 37 C.F.R. § 41.37(c)(1)(iv), dependent claims 2, 4–6, 9, 10, 12, 14–16, 19, and 20 stand or fall with their respective independent claim.

The Examiner identifies each step recited in claim 1, except for the steps of receiving a request from a client to analyze a time-series data, accessing a database of global calendars and transmitting the data that identifies the locations of the anomalies, as reciting an abstract idea of either a mathematical concept or a mental process. Final Act. 3–5.

The Examiner further finds that the additional claim 1 elements/steps of receiving a request to analyze a time-series data comprising a plurality of data points and accessing a database of global calendars are insufficient to

amount to significantly more than the judicial exception because the description of mere data gathering in these additional steps in conjunction with the abstract ideas amount to only insignificant extra solution activity to the judicial exception. *Id.* at 5. The Examiner also finds that the step of transmitting the data that identify the locations of the anomalies amounts to insignificant extra solution reporting of a calculated result. *Id.* at 6.

With respect to system claim 11, the Examiner finds the claimed network interface of a server, the structural time-series module of the server, the anomaly detector of the server, and the report generator of the server are described at a high level of generality and amount to merely generic elements of the computer server to perform the generic functions of receiving, processing, or outputting data, which does not add something significantly more to the abstract idea. *Id.* at 5–6.

Appellant raises a number of arguments with regard to this rejection that we address throughout the opinion. Appeal Br. 3–8; Reply Br. 1–3.

### *Legal Framework*

An invention is patent eligible if it claims a “new and useful process, machine, manufacture, or composition of matter.” 35 U.S.C. § 101. However, the Supreme Court has long interpreted 35 U.S.C. § 101 to include implicit exceptions: “[l]aws of nature, natural phenomena, and abstract ideas” are not patentable. *E.g., Alice Corp. v. CLS Bank Int’l*, 573 U.S. 208, 216 (2014).

In determining whether a claim falls within an excluded category, our inquiry focuses on the Supreme Court’s two-step framework, described in *Mayo* and *Alice*. *Alice*, 573 U.S. at 217–18 (citing *Mayo Collaborative*

*Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 75–77 (2012)). In accordance with that framework, we first determine what concept the claim is “directed to.” See *Alice*, 573 U.S. at 219 (“On their face, the claims before us are drawn to the concept of intermediated settlement, *i.e.*, the use of a third party to mitigate settlement risk.”); see also *Bilski v. Kappos*, 561 U.S. 593, 611 (2010) (“Claims 1 and 4 in petitioners’ application explain the basic concept of hedging, or protecting against risk.”).

Concepts determined to be abstract ideas, and thus patent ineligible, include certain methods of organizing human activity, such as fundamental economic practices (*Alice*, 573 U.S. at 219–20; *Bilski*, 561 U.S. at 611); mathematical concepts (*Flook*, 437 U.S. at 594–95); and mental processes (*Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)). Concepts determined to be patent eligible include physical and chemical processes, such as “molding rubber products” (*Diamond v. Diehr*, 450 U.S. 175, 191 (1981)); “tanning, dyeing, making water-proof cloth, vulcanizing India rubber, smelting ores” (*id.* at 182 n.7 (quoting *Corning v. Burden*, 56 U.S. 252, 267–68 (1853))); and manufacturing flour (*Benson*, 409 U.S. at 69 (citing *Cochrane v. Deener*, 94 U.S. 780, 785 (1876))).

In *Diehr*, the claim at issue recited a mathematical formula, but the Supreme Court held that “a claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula.” *Diehr*, 450 U.S. at 187; see also *id.* at 191 (“We view respondents’ claims as nothing more than a process for molding rubber products and not as an attempt to patent a mathematical formula.”). Having said that, the Supreme Court also indicated that a claim “seeking patent protection for that formula in the abstract. . . is not accorded the protection

of our patent laws, and this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment.” *Id.* (citing *Benson* and *Flook*); *see, e.g., id.* at 187 (“It is now commonplace that an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection.”).

If the claim is “directed to” an abstract idea, we turn to the second step of the *Alice* and *Mayo* framework, where “we must examine the elements of the claim to determine whether it contains an ‘inventive concept’ sufficient to ‘transform’ the claimed abstract idea into a patent-eligible application.” *Alice*, 573 U.S. at 221 (quotation marks omitted). “A claim that recites an abstract idea must include ‘additional features’ to ensure ‘that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].’” *Id.* (quoting *Mayo*, 566 U.S. at 77). “[M]erely requir[ing] generic computer implementation[] fail[s] to transform that abstract idea into a patent-eligible invention.” *Id.*

The Office has published revised guidance on the application of § 101. USPTO’s January 7, 2019 Memorandum, *2019 Revised Patent Subject Matter Eligibility Guidance* (“Memorandum”), 84 Fed. Reg. 50, as updated in October 2019.<sup>2</sup> Under that guidance, we first look to whether the claim recites:

(1) any judicial exceptions, including certain groupings of abstract ideas (i.e., mathematical concepts, certain methods of organizing human activity such as a fundamental economic practice, or mental processes); and

---

<sup>2</sup> We recognize that the Memorandum was not available to the Examiner and Appellant during the prosecution of the instant Application.

(2) additional elements that integrate the judicial exception into a practical application (*see* MPEP § 2106.05(a)–(c), (e)–(h)).

Only if a claim recites a judicial exception and does not integrate that exception into a practical application, do we then look to whether the claim:

(3) adds a specific limitation beyond the judicial exception that is not “well-understood, routine, conventional” in the field (*see* MPEP § 2106.05(d)); or

(4) simply appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception.

*See generally* Memorandum.

### *Analysis*

#### *Determination of Claims’ Statutory Category*

Before any consideration as to whether claims 1 and 11 are directed to patent-ineligible subject matter, such as an abstract idea, we must first determine if the claim falls under a statutory category, as a “new and useful process, machine, manufacture, or composition of matter.” 35 U.S.C. § 101.

There is no dispute between Appellant and the Examiner that claim 1 falls under a statutory category under 35 U.S.C. § 101. *See generally* Appeal Br.; *see generally* Final Act.

For completeness, we note that (1) independent claim 1 is a method claim falling under the statutory category of a “process,” and (2) independent system claim 11 is an apparatus falling under the statutory category of “machine” under 35 U.S.C. § 101.

Having established that the claims fall in a statutory category, we now follow the Memorandum to analyze claims 1 and 11 to determine if they are directed to patent-ineligible subject matter.

*Determination of Patent Subject Matter Eligibility*

Applying the guidance set forth in the Memorandum, we conclude that claims 1 and 11 do not recite patent-eligible subject matter.

*Revised Step 2A, Prong One—Recites Judicial Exceptions*

The Memorandum instructs us first to determine whether each claim recites any judicial exception to patent eligibility. 84 Fed. Reg. at 54. The Memorandum identifies three judicially-excepted groupings of abstract ideas: (1) mathematical concepts, (2) certain methods of organizing human activity such as fundamental economic practices, and (3) mental processes. *Id.* at 52. The Examiner finds claim 1 recites mathematical relationships, mathematical calculations, and mental processes for identifying an aggregate anomaly data point and slice anomaly data point. Ans. 5.

*Claim 1*

Claim 1 recites a computer-implemented method comprising the steps of (a) building a structural time-series model from the time-series data and the database of global calendars, (b) determining, for each data point of the time-series data, a range of expected values from a respective probability distribution, the range of expected values capturing a predefined percentage of the respective probability distribution, (c) detecting an aggregate anomaly at a first data point of the aggregation of time-series data responsive to comparing the first data point with a respective range of expected values, (d) detecting a slice anomaly in slice data for one of the data dimensions,

wherein the slice data has a fixed value for one of the data dimensions, and (e) determining that a time of the slice anomaly matches a time of the aggregate anomaly.

*(a) Step of building a structural time-series model. . .*

The step of building a structural time-series model is recited at a high level of generalization and merely provides information, through mathematical operations, to be used in the process. The claim recites that the structural time-series model comprises “an aggregation of time-series data in a plurality of data dimensions and a plurality of probability distributions.” This step further recites that “each probability distribution correspond[s] to a data point in the aggregation of time-series data.” A probability distribution is a mathematical function. According to the Specification, the step of building a structural time-series model<sup>3</sup> “includes building a dynamic linear model, a state-space model, and/or a Bayesian time-series model.” Spec. ¶ 74. The Specification further discloses that the model relies on Markov Chain Monte Carlo (MCMC) iterations to estimate the values of the components comprising or corresponding to a probability distribution, where iterations are performed to decrease the uncertainty associated with each component. Spec. ¶ 105. Thus, the step of building the model encompasses any number of mathematical relationships where probability distributions are associated with data points and recites a mathematical concept.

---

<sup>3</sup> The Specification describes the structural time-series module of the server as a mathematical relationship or, at best, executable software including mathematical relationships. Spec. ¶ 103. Therefore, we interpret the structural time-series model to be a mathematical model that uses mathematical relationships to generate data. See *id.* ¶ 104.

*(b) Step of determining, for each data point of the time-series data, a range of expected values from a respective probability distribution, . . .*

The step of “determining, for each data point of the time-series data, a range of expected values from a respective probability distribution” is recited at a high level of generalization. The last clause of the step, recites that “the range of expected values captur[es] a predefined percentage of the respective probability distribution” further defines a property of the “range of expected values,” which is data. This step also involves a mathematical relationship where probability distributions are associated with data points. Further, according to the Specification, “the range of expected values may be determined by the mean and the standard deviation value generated by the model for each data point.” Spec. ¶ 75. The Specification further explains that “the anomaly parameter may be used with the mean and the standard deviation *to calculate* the range of expected values for each data point.” *Id.* Thus, this step involves a mathematical relationship that recites a mathematical concept.

*(c) Step of detecting an aggregate anomaly at a first data point of the aggregation of time-series data responsive to comparing the first data point with a respective range of expected values, and*

*(d) Step of detecting a slice anomaly in slice data for one of the data dimensions, . . .*

The steps of detecting an aggregate anomaly and detecting a slice anomaly are anomalies in data. The Specification describes that aggregate anomaly “refers to anomalies that are detected in the aggregate time-series data.” Spec. ¶ 83. The Specification states that a slice anomaly is an anomaly detected in a slice data. *Id.* at ¶ 78. We address these steps together because the Specification discloses that “[d]etecting a slice anomaly

may be similar to detecting an aggregate anomaly as describe[d] in step 410, and as described in relation to relation to steps 310 through steps 325 of FIG. 3.” *Id.* ¶ 86. That is, both types of anomalies are detected using a similar approach.

These steps are recited at a high level of generalization. The Specification describes the step of detecting an anomaly as detecting an anomaly corresponding to a respective data point that lies outside a respective range of expected values. Spec. ¶ 76. The claim recites comparing a data point with a respective range of expected values to detect an aggregate anomaly. The claim also recites that a slice data must have a fixed value for one of the data dimensions to detect a slice anomaly. This, therefore, involves a comparison of data against a set of data. Comparing data points against a range of expected values or data dimensions are steps that can be performed in the human mind. As such, these steps are mental steps that recite a mental process.

*(e) determining that a time of the slice anomaly matches a time of the aggregate anomaly*

The step of determining that a time of the slice anomaly matches a time of the aggregate anomaly is recited at a high level of generalization. The Specification describes the step of determining that a time of the slice anomaly matches a time of the aggregate anomaly may include comparing the time of the slice anomaly with a time of the aggregate anomaly based on a number of factors to find a match. Spec. ¶¶ 88–89. Comparing data points is a step that can be performed in the human mind. As such, this step is a mental step that recites a mental process.

*Claim 11*

Independent claim 11 recites a computing apparatus (system) comprising a network interface of a server, a structural time-series module of the server, an anomaly detector, and a report generator, where each of the components performs the steps of method claim 1. Claim 11 recites these components at a high level of generality.

The Specification teaches that the interface may be an electronic display, a touch screen, a speaker, a keyboard, a pointing device, a mouse, a microphone, a printer, a gamepad, etc. Spec. ¶ 21.

The Specification discloses that the structural time-series module may comprise a Bayesian structural time-series (BSTS) model. *Id.* ¶¶ 97, 103. The Specification describes the structural time-series module of the server as a mathematical relationship or, at best, executable software including mathematical relationships. Spec. ¶ 103. Therefore, we construe the structural time-series model to be a mathematical model that uses mathematical relationships to generate data. *See id.* ¶ 104.

The Specification does not ascribe any particular details to an anomaly detector. *See generally id.* However, Mathis,<sup>4</sup> made of record by Appellant in an Information Disclosure Statement entered into the record on January 10, 2017, discloses that it was known to use anomaly detectors in “methods and apparatus for anomaly detection in time series data using predictive modeling.” Mathis ¶¶ 3, 16.

The Specification teaches that the report generator may include web search service, a reporting service, an online video-sharing service, a video

---

<sup>4</sup> US 2014/0108640 A1, issued April 17, 2014.

streaming service, an audio streaming service, an image sharing service, a file storing service, a document indexing service, a database service, a website service, an email service, a social media service, an online chat service, an online shopping service, an online advertisement auction service, or any other service or resources. *Id.* ¶ 35. In addition, the Specification discloses that the report may include a visual representation, such as a graph, of the time series data, the range of expected values at each data point, and an indication of data points at which an anomaly was detected. *Id.* at 77. These devices are merely configured so as to perform the method of claim 1, which recites a judicial exception, i.e., mathematical concept, and the system likewise also recites this judicial exception. Fundamentally, this claim recites the same judicial exceptions, mental processes and mathematical concepts, for substantially the same reasons as provided above regarding claim 1.

In the Reply Brief, Appellant relies on illustrative 101 Guidance Example 38<sup>5</sup> to assert that the claims do not recite the abstract idea of a mathematical concept because the claims do not recite a mathematical relationship, formula, or calculation. Reply Br. 1. Example 38 is part of a group of Examples published by the USPTO on January 7, 2019, accessible at [https://www.uspto.gov/sites/default/files/documents/101\\_examples\\_37to42\\_20190107.pdf](https://www.uspto.gov/sites/default/files/documents/101_examples_37to42_20190107.pdf) (hereinafter as “Examples Document” or “Ex. Doc.”). Ex. Doc. 6. As the document states, these examples “are

---

<sup>5</sup> The USPTO provided these examples for use in conjunction with the USPTO’s January 7, 2019 Memorandum, 2019 Revised Patent Subject Matter Eligibility Guidance (“Memorandum”), 84 Fed. Reg. 50, as updated in October 2019. *Id.* 1.

hypothetical and only intended to be illustrative of the claim analysis under the [Memorandum].” *Id.* The Examples Document also advises that “[t]hese examples should be interpreted based on the fact patterns set forth below as other fact patterns may have different eligibility outcomes.” *Id.* That is, the examples are not determinative of patent eligibility of claims. *Id.*

Appellant also relies on Example 38 to assert that the claims do not recite the abstract idea of a mental process because the steps are not practically performed in the human mind. Reply Br. 1. Appellant also asserts that the claims do not recite a certain method of organizing human activity such as a fundamental economic concept or commercial and legal interactions. *Id.*

Example 38 illustrates a hypothetical claim as follows (formatting added):

A method for providing a digital computer simulation of an analog audio mixer comprising:

- a. initializing a model of an analog circuit in the digital computer, said model including a location, initial value, and a manufacturing tolerance range for each of the circuit elements within the analog circuit;
- b. generating a normally distributed first random value for each circuit element, using a pseudo random number generator, based on a respective initial value and manufacturing tolerance range; and
- c. simulating a first digital representation of the analog circuit based on the first random value and the location of each circuit element within the analog circuit.

Ex. Doc. 6.

For the purposes of this opinion we focus on method step b to address Appellant’s arguments.

Step b recites “generating a normally distributed first random value for each circuit element, using a pseudo random number generator, based on a respective initial value and manufacturing tolerance range.” *Id.*

According to the Examples Document, even though some of the limitations may be based on mathematical concepts, this step does not recite a mathematical relationship, formula, or calculation because the mathematical concepts are not recited in the claims. *Id.* at 7.

Appellant contends that claim 1, like Example 38, does not recite the abstract idea of a mathematical concept because the claims do not recite a mathematical relationship, formula, or calculation. Reply Br. 1.

We are unpersuaded by this argument. “It is of no moment that the algorithm [or mathematical concept] is not expressed in terms of a mathematical formula. Words used in a claim operating on data to solve a problem can serve the same purpose as a formula.” *In re Grams*, 888 F.2d 835, 837 and n.1, 12 USPQ2d 1824, 1826 and n.1 (Fed. Cir. 1989).

The exemplary language of Example 38’s claim merely recites that a first random value is generated based on two inputted values, “a respective initial value and manufacturing tolerance range.” Even though a mathematical relationship is implied in the claim, the exemplary language does not specify any mathematical relationship regarding how the two inputs result in the desired output. The step of building a structural time-series model in Appellant’s claim 1 recites that “the structural time-series model comprising an aggregation of time-series data in a plurality of data dimensions and a plurality of probability distributions, each probability distribution corresponding to a data point in the aggregation of time-series data.” Claim 1 also recites the step of “determining, for each data point of

the time-series data, a range of expected values from a respective probability distribution, the range of expected values capturing a predefined percentage of the respective probability distribution.”

Thus, unlike the language of the claim in Example 38, the language of Appellant’s claim 1 is more particular because it identifies sufficiently that the data point/range of expected values are associated or correlated with a probability distribution. Therefore, the claim language defines a mathematical relationship which recites a mathematical concept.

We are also unpersuaded by Appellant’s argument that claim 1 does not recite a mental process because the steps are not practically performed in the human mind. Reply Br. 1. Appellant does not explain why the data comparison recited in claim 1’s steps of “detecting an aggregate anomaly at a first data point of the aggregation of time-series data responsive to comparing the first data point with a respective range of expected values,” “detecting a slice anomaly in slice data for one of the data dimensions, wherein the slice data has a fixed value for one of the data dimensions,” and “determining that a time of the slice anomaly matches a time of the aggregate anomaly” *cannot* practically be performed in the human mind. Memorandum, 84 F.3d 52 n.14 (“If a claim, under its broadest reasonable interpretation, covers performance in the mind but for the recitation of generic computer components, then it is still in the mental processes category unless the claim cannot practically be performed in the mind.”).

Accordingly, applying the guidance in the Memorandum, we conclude that claims 1, 11, and, thus, all claims on appeal each recite an abstract idea, i.e., a mental process and a mathematical concept, and, as such, recite a judicial exception.

*Revised Step 2A, Prong Two – Practical Application*<sup>6</sup>

Having determined that claims 1 and 11 recite the abstract ideas of a mental process and mathematical concept, we next look to determine whether the claims recite “additional elements that integrate the [judicial] exception into a practical application.” MPEP § 2106.05(a)–(c), (e)–(h); Memorandum, 84 F.3d at 53–54. Integration into a practical application requires an additional element or a combination of additional elements in the claim to “apply, rely on, or use the judicial exception in a manner that imposes a meaningful limit on the judicial exception, such that the claim is more than a drafting effort designed to monopolize the judicial exception.” Memorandum, 84 Fed. Reg. at 53–54; *see also id.* at 55 (setting forth exemplary considerations indicative that an additional element or combination of elements may have integrated the judicial exception into a practical application).

Claim 1 recites the additional steps of (1) receiving a request from a client to analyze a time-series data, (2) accessing a database of global calendars, and (3) transmitting/displaying the result obtained from the method. In addition, claim 1 recites a server and a database.

We find that the additional elements recited in claim 1 do not integrate the judicial exception into a practical application. While Appellant asserts that the claim is directed to an “improvement in computer functionality,” claim 1 does not positively recite a computer nor does the Specification

---

<sup>6</sup> We acknowledge that some of these considerations may be properly evaluated under Step 2 of *Alice* (Step 2B of Office Memorandum). Solely for purposes of maintaining consistent treatment within the Office, we evaluate it under Step 1 of *Alice* (Step 2A of Office Memorandum). *See generally* Memorandum, 84 Fed. Reg. 50.

describe an improvement to the functioning of a computer. In fact, the Specification describes that the claimed invention may be practiced with “any number and/or type of user-operable electronic device,” including “a general-purpose computing device.” Spec. ¶¶ 21, 27. Nor are the additional elements directed to a particular machine or transformation. In addition, Appellant does not argue or otherwise demonstrate that the claims provide an improvement to another technology or technical field. To the contrary, the Examiner determined that the claimed method does not improve another technology or technical field. Final Act. 7. The claim merely produces data that “identify[] the precise location in the time series where [an] underlying anomaly occurs” that is used “to perform further analysis.” Appeal Br. 3. Indeed, the method does not require any step of applying or using these numbers for any purpose or to solve any problem. The steps of receiving a request, accessing a database, and transmitting/displaying a result, as noted above, are merely data gathering steps that do not integrate the claimed method into a practical application.

The server and database are not devices that improve the functioning of a computer or result in improvements to another technology or technical field, nor does Appellant argue otherwise. We note that Appellant discloses the server as broadly encompassing any number and/or type of user-operable electronic devices (Spec. ¶ 21) and the database as broadly encompassing any type of non-volatile memory, media, or memory devices (*id.* ¶ 27). That is, the Specification discloses that these devices can be any device capable of performing the stated function at a high level of generality.<sup>7</sup> But such

---

<sup>7</sup> Although some of these considerations also may be properly evaluated under Step 2 of *Alice* (Step 2B of Office guidance), consistent with the

disclosure does not integrate the mathematical concept and the mental process recited in the claims into a practical application. *See* Memorandum, 84 Fed. Reg. at 55 (setting forth examples in which a judicial exception has not been integrated into a practical application).

With regard to the system of claim 11 comprising a network interface of a server, a structural time-series module of the server, an anomaly detector, and a report generator, as indicated above, none of these devices is directed to a particular machine or transformation, nor does Appellant argue otherwise. Moreover, none of these devices improve the functioning of a computer or to another technology or technical field, nor does Appellant argue otherwise. We note that Appellant discloses these devices broadly encompass any device capable of performing the stated function at a high level of generality.<sup>8</sup> *See, for example*, Spec. ¶¶ 21 (types of interface), 35 (report generator). But such disclosure does not integrate the mathematical concepts recited in the claims into a practical application. *See* Memorandum, 84 Fed. Reg. at 55 (setting forth examples in which a judicial exception has not been integrated into a practical application).

Appellant argues that the claims recite “a practical application of any alleged judicial exception” because they are directed to an improvement in the functioning of a computer or other technology or technological field. Reply Br. 1. Appellant argues that claim 1, like the claims at issue in *Core*

---

Memorandum, we evaluate them under Step 1 of *Alice* (Step 2A of Office guidance). *See* Memorandum, 84 Fed. Reg. at 55.

<sup>8</sup> Although some of these considerations also may be properly evaluated under Step 2 of *Alice* (Step 2B of Office guidance), consistent with the Memorandum, we evaluate them under Step 1 of *Alice* (Step 2A of Office guidance). *See* Memorandum, 84 Fed. Reg. at 55.

*Wireless Licensing S.A.R.L. v. LG Electronics, Inc.*, 880 F.3d 1356 (2018), provides “an improved user interface for a computing device” that “improve[s] the efficiency of using [an] electronic device” by “allow[ing] the user to see the most relevant data” and directing the user to the slice of data that is causing the presented anomaly in the aggregate time-series data rather than leaving it to the user to explore the various slices of data in an effort to determine which slice of data is causing the presented anomaly. Appeal Br. 4–6; Reply Br. 2. That is, Appellant contends that claim 1 improves the functioning of a computer by providing an improved interface that guides the user directly to the slice of data that is the root of the problem even though the individual slice of data is not presented on the screen. Reply Br. 2.

In *Core Wireless*, the court determined that the involved claims were patent eligible because they were “directed to an improved user interface for computing devices, not to the abstract idea of an index.” 880 F.3d at 1362. The court reasoned that

[a]lthough the generic idea of summarizing information certainly existed prior to the invention, these claims are directed to a particular manner of summarizing and presenting information in electronic devices. Claim 1 of the ’476 patent requires “an application summary that can be reached directly from the menu,” specifying a particular manner by which the summary window must be accessed. The claim further requires the application summary window list a limited set of data, “each of the data in the list being selectable to launch the respective application and enable the selected data to be seen within the respective application.” This claim limitation restrains the type of data that can be displayed in the summary window. Finally, the claim recites that the summary window “is displayed while the one or more applications are in an un-launched state,” a requirement that the device applications exist

in a particular state. These limitations disclose a specific manner of displaying a limited set of information to the user, rather than using conventional user interface methods to display a generic index on a computer.

*Id.* at 1362–63. The court concluded that the claims were patent eligible because they “recite[d] a specific improvement over prior systems, resulting in an improved user interface for electronic devices,” and, therefore, were directed to “an improvement in the functioning of computers.” *Id.* at 1363.

We first note that method claim 1 recites the use of a server and a database but fails to recite limitations related to a user interface or an improvement in the functioning of a user interface. As we note above, the Specification teaches that the interface may be an electronic display, a touch screen, a speaker, a keyboard, a pointing device, a mouse, a microphone, a printer, a gamepad, etc. Spec. ¶ 21. These appear to be conventional user interfaces. Thus, the potential improvement to user experience provided by the claimed invention relates solely to the format or content of the displayed data, not to the functioning of the user interface itself.

To support the contention that the claimed invention is directed to an improvement in the functioning of a computer or other technology or technological field by providing an improved user interface, Appellant directs us to claim 1’s language:

in response to determining that the time of the slice anomaly matches the time of the aggregate anomaly, transmitting, to the client for display, data that identify a location of the aggregate anomaly in the aggregation of time-series data as well as data identifying the slice anomaly as a drill-down suggestion indicating that, although not initially presented in the aggregation of time series data, the slice anomaly will be included in a presentation of the slice data.

Appeal Br. 3; Reply Br. 2. In fact, the noted claim language recites an improvement to the visual representation in the format of the data presented to a user and not the user interface itself. This visual representation presents data to the user in a customized form with respect to an aggregate anomaly in the aggregation of time-series data, including data identifying a slice anomaly as a drill-down suggestion. While this language recites that the data presents a drill-down suggestion to arrive at a slice anomaly, it does not recite how a user interface is improved by the drill-down suggestion or by its use. Further, while Appellant argues that claim 1, like the *Core Wireless* claims, provides a particular manner of “summarizing and presenting information” (Appeal Br. 4), Appellant has not explained adequately how this improves a user interface.

Appellant argues that, unlike *Electric Power Group, LLC v. Alstom S.A.*, 830 F.3d 1350 (Fed. Cir. 2016), the claimed invention uses an inventive technique for displaying a drill-down suggestion indicating that, although not initially presented in the aggregation of time series data, the slice anomaly will be included in a presentation of the slice data. Appeal Br. 4. According to Appellant, the claimed invention not only displays data results but also does more by pointing the user directly to a slice (i.e., a dimension) of data that is the cause of the anomaly identified with the aggregate time-series data presented to the user, thereby enabling the user to more quickly identify and access the slice data that is causing the anomaly. *Id.*

This argument supports our determination that the noted claim language addresses an improvement to the visual representation in the format of the data presented to a user and not the user interface itself.

Therefore, we agree with the Examiner that claim 1 is similar to the patent-ineligible claims in *Electric Power* that focus “on collecting [data], analyzing it, and displaying certain results of the collection and analysis.” Final Act. 6; Ans.5; *Electric Power*, 830 F.3d at 1353. “[M]erely presenting the results of abstract processes of collecting and analyzing information, without more (such as identifying a particular tool for presentation), is abstract as an ancillary part of such collection and analysis.” *Electric Power*, 830 F.3d at 1354; *see also id.* at 1353 (“[W]e have treated collecting information, including when limited to particular content (which does not change its character as information), as within the realm of abstract ideas.”).

Therefore, we find that the claimed subject matter does not integrate the judicial exception into a practical application.

Accordingly, we conclude, as did the Examiner, that claim 1 recites a judicial exception, i.e., the abstract ideas of a mental process and a mathematical concept, and does not integrate this judicial exception into a practical application.

With regard to apparatus claim 11, as indicated above, none of the apparatus’s components improve the functioning of a computer or another technology or technical field. While claim 11 recites “a network interface of a server receiving a request from a client to analyze a time-series data comprising a plurality of data points,” we again note that the Specification does not disclose the interface used is anything other than conventional user interfaces. Spec. ¶ 21. In addition, like claim 1, claim 11 does not recite how a user interface is improved to analyze a time-series data comprising a plurality of data points. Thus, we find Appellant’s arguments, as applied to claim 11, unpersuasive for the reasons we give above.

Accordingly, we conclude, as did the Examiner, that the claims recite a judicial exception, i.e., the abstract idea of a mathematical relationship for calculating the transmittance and reflectance values of a material, and do not integrate this judicial exception into a practical application.

*Step 2 B–Inventive Concept*

Because we determine that claims 1, 11, and, thus, all the claims under appeal recite an abstract idea and do not include additional elements that integrate the abstract idea into a practical application, we look to whether the claims provide an inventive concept, i.e., adds a specific limitation beyond the judicial exception that is not “well-understood, routine, conventional” in the field. Memorandum, 84 Fed. Reg. at 56.

As we note above, claim 1 only generally recites the use of a server and a database to perform claim 1’s steps of receiving a request and accessing global calendars. The Specification discloses the server as broadly encompassing any number and/or type of user-operable electronic devices (Spec. ¶ 21) and the database as broadly encompassing any type of non-volatile memory, media, or memory devices (*id.* ¶ 27). That is, the Specification discloses that these devices can be any device capable of performing the stated function at a high level of generality. Claim 1 does not recite any additional elements, such as specific components of the computer.

While Appellant contends that claim 1 provides “an improved user interface for a computing device” that “improve[s] the efficiency of using [an] electronic device” (Appeal Br. 4–6; Reply Br. 2), claim 1 fails to recite limitations related to a user interface or an improvement in the functioning of a user interface. As we note above, the Specification discloses the use of

what are conventional and well known types of interfaces (an electronic display, a touch screen, a speaker, a keyboard, a pointing device, a mouse, a microphone, a printer, a gamepad, etc.). Spec. ¶ 21.

Even if a user interface was positively recited in claim 1, it would not add a specific limitation beyond the judicial exception that is not “well-understood, routine, conventional” in the field, taken individually or as an ordered combination with the claimed steps.

We have again considered Appellant’s arguments regarding the claimed invention being an improvement in computer-related technologies in our deliberations of this step. Appeal Br. 4–6; Reply Br. 1–3. We maintain our position that these arguments lack persuasive merit for the reasons we give above.

There is no dispute that the claimed elements were known in the art and, thus, “well-understood, routine, and conventional.” Spec. ¶¶ 21, 35, 103; Mathis ¶¶ 6, 13. Rather than arguing to the contrary, Appellant argues that the claimed invention contains an inventive concept in their ordered combination of limitations sufficient to satisfy the second step of the Supreme Court’s Alice test. Appeal Br. 3. Specifically, Appellant contends that the claimed invention (1) presents a display representing an aggregation of time series data for multiple different dimensions (“slices”) of data with the ability to pinpoint and identify, within the display representing aggregation of time series data, a specific slice of data in which an anomaly exists, (2) identifies the precise location in the time series where that underlying anomaly occurs so that the user can directly drill down into that specific slice of data in which the anomaly exists to perform further analysis. *Id.* Appellant contends that the claimed subject matter improves computer

functionality by using a combination of features that was not “well-known, routine, conventional” as of the filing date of the application. *Id.* at 7.

We are unpersuaded by these arguments for reasons we give above. Specifically, we again note that the subject matter of claim 1 does not recite a user interface which Appellant relies upon as the basis for an improvement in computer functionality. Further, as we also note above, the claim language that Appellant directs us to addresses the visual representation of the data and the functionality of the user interface itself.

Appellant argues that the claims do not preempt all applications of the alleged abstract idea. Appeal Br. 7. According to Appellant, “the claims recite a specific combination of features that provide ‘a particular solution to a problem or a particular way to achieve a desired outcome’” and “do not preempt other techniques that do not include the combination of features recited above.” *Id.*

We have considered Appellant’s arguments on this issue but are unpersuaded of reversible error in the Examiner’s determination for the reasons presented by the Examiner. Ans. 13–14. Appellant has not identified error in the Examiner’s determination that the components are “well-understood, routine, and conventional.”

With regard to apparatus claim 11, this claim recites a computing apparatus (system) comprising a network interface of a server, a structural time-series module of the server, an anomaly detector, and a report generator, where each of the components performs the steps of method claim 1. Claim 11 recites these components at a high level of generality.

As we discuss above, the claimed elements are acknowledged as known in the art and, thus, “well-understood, routine, and conventional.”

Spec. ¶¶ 21, 35, 103; Mathis ¶¶ 6, 13. Appellant has not argued adequately to the contrary. *See generally* Appeal Br.

While Appellant argues that the claimed invention contains an inventive concept in their ordered combination of limitations (Appeal Br. 3), the claim language is specifically directed to performing calculations and not a specific configuration of the computer apparatus.

Therefore, we agree with the Examiner's determination that the claimed steps and components are well-understood, routine and conventional activities/components. Ans. 6. Further, courts have recognized the performance of repetitive calculations by a computer as a well-understood, routine, conventional activity. *Flook*, 437 U.S. at 594 (recomputing or readjusting alarm limit values); *Bancorp Servs. L.L.C. v. Sun Life Assurance Co.*, 687 F.3d 1266, 1278 (Fed. Cir. 2012) (“The computer required by some of Bancorp’s claims is employed only for its most basic function, the performance of repetitive calculations, and as such does not impose meaningful limits on the scope of those claims.”).

We also reevaluate our conclusions about whether the recited computer apparatus integrates the abstract idea into a practical application. *See* Guidance, 84 Fed. Reg. at 56. Because the recited computer apparatus (and its components) adds nothing more than well-understood, routine, conventional activities, those conclusions stand. Considering both our previous conclusions and the findings about well-understood, routine, and conventional activity, we determine that the claimed method does not use the computer apparatus in a way that indicates that the claim provides an inventive concept. Therefore, we find no element or ordered combination of elements recited in claims 1 and 11 that contains any “inventive concept” or

adds anything “significantly more” to transform the abstract concept (i.e., mental processes and mathematical concepts) into a patent-eligible application.

Accordingly, we conclude that claims 1, 2, 4–6, 9–12, 14–16, 19 and 20 are directed to patent-ineligible subject matter under 35 U.S.C. § 101. They ensnare the abstract ideas of a mental process and mathematical concept and do not recite additional elements, individually or as an ordered combination, that integrate this mental process and mathematical concept into a practical application.

### CONCLUSION

In summary:

<b>Claims Rejected</b>	<b>35 U.S.C. §</b>	<b>Reference(s)/Basis</b>	<b>Affirmed</b>	<b>Reversed</b>
1, 2, 4–6, 9–12, 14–16, 19, 20	101	Ineligible subject matter	1, 2, 4–6, 9–12, 14–16, 19, 20	

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED